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SECTION 1 - INTRODUCTION

1.1 Purpose of Guideline

This EDI implementation Guideline outlines the implementation of the Electronic Data Interchange (EDI) interface for submission of the Self Monitoring Report (SMR) to Publicly Owned Treatment Works (POTW's). It may also be used to submit Annual Reports from the POTW's to the United States Environmental Protection Agency (USEPA).

The implementation guideline reflects minimal core data required for SMR submissions. However individual POTW's may require additional information from reporting entities. This data may be carried within the transaction set based on trading partner business needs and agreements.

1.2 Scope and Applicability

The Implementation Guideline is intended to provide prospective EDI Trading Partners, (Testing Laboratories, Industrial Facilities and POTW's) with the information necessary to understand the EDI goals. This document contains the specifics for conducting business with the POTW's using EDI for SMR submissions.

1.2.1 Project Overview

The Self Monitoring Report (SMR) is the periodic report required under 40 CFR 403.12 for continued compliance for indirect discharges. The Regulatory Information Inventory and Team Evaluation (RIITE) project members have been working with POTW's to create a generic, streamlined format that can be used as a basis for generating EDI and Internet formats for electronic reporting.

The RIITE team has completed the development of an Electronic Data Interchange (EDI) convention to exchange SMR data electronically between trading partners. The convention is based on SMR data identified by participating POTW's during the RIITE pilot development of a generic SMR form. The generic SMR form itself represents a compilation of POTW requirements identified during the RIITE pilot and is not an official EPA document. The generic form is contained within this implementation guideline only for informational purposes and should be regarded as the tool for specifying minimal data collected by the POTW's.

The SMR form contains information for submission of pretreatment data. Facilities voluntarily report discharge levels of regulated pollutants to the POTW's. Each POTW, in turn, collects the data and submits annual summary reporting to the USEPA. Each POTW may require more specific and/or additional information from the reporting entities based on their State or Local regulatory requirements.

SMR data consists of outfall level test data, which has been performed by a certified testing lab. This data is then given to the discharging facility, which verifies and certifies the data. The resulting test data is then given to the POTW for analysis. The burden of paper reporting is significant for all trading partners, as the data must be re-keyed and verified by each party. The re-keying effort causes delays in the reporting process and significantly reduces the data quality of the reports.

1.2.2 SMR EDI Objective

The objective of SMR EDI Program is to offer electronic reporting options to the regulated community who must submit SMR data to POTW's. The EDI formats will allow all trading partners to exchange this data and to import the data without human intervention. This will significantly reduce the reporting burden on the industrial facilities as well as reduce the re-keying efforts on the POTW's. It is envisioned that the timeliness and quality of the data will be drastically enhanced.

1.2.3 EDI Approach

The RIITE team has developed an approach to EDI that will benefit all participants—the regulated community, Testing Labs and the POTW's. This approach involves:

- Implementing EDI using ANSI ASC X12 standards;
- Specifically using transaction sets 863 Reporting of Test Results and 997 Functional Acknowledgment; and
- Employing either traditional EDI or Internet-based technologies.

This approach can facilitate new business relationships and information flows as well. The data may now be exchanged easily from testing labs directly to the POTW's. Industrial facilities may then validate and certify the data electronically. Reporting and validation processes can now be easily re-engineered.

1.3 Responsible Entity

The responsible entities are the POTW's, Industrial Facilities and Testing Laboratories. The major responsibility for SMR reporting still lies with the Industrial Facility who must verify and certify their data.

1.4 Introduction to EDI

EDI is the transmission of business information from the application program of one computer to the application program of another computer within the framework of a standard format. In the case of the SMR, it will be transferred in ASC X12 syntax. The key elements in this definition are computer-to-computer and standard format. EDI reduces costs and errors associated with a paper document environment. It replaces mail delivery and reentry of documents with an electronic mailbox and

delivery of business data directly to a Trading Partner's computer application program.

1.5 How to Use the Implementation Guideline

This implementation guideline follows the ASC X12 recommended format specified in the "ASC X12 Guideline for Electronic Data Interchange EDI Implementation Reference Guidelines", approved February 1991, ASC X12 D/90-856. This document contains information necessary for the States and their Trading Partners to fulfill the requirements for implementing the exchange of SMR data utilizing EDI. These sections include the EDI business background and history, as well as policy and logistic issues that should be addressed. The appendices contain a checklist on how to get started with EDI SMR, and provide conventions of the specific X12 transaction sets to satisfy the EDI information requirements for transmittal of a SMR electronically.

1.6 References

Standards publications, guidelines and technical reports disseminate the technical and logical concepts reflected in the X12 Standards. DISA (*Data Interchange Standards Association*) publishes a catalog of the available standards. *Part I* is a document titled "An Introduction to Electronic Data Interchange". *Part II* is the catalog of the ASC X12 Publications.

General or Technical questions about Electronic Data Interchange, ASC X12, ASC X12 Standards and Updates, international standards, or DISA can be directed to:

Data Interchange Standards Association, Inc (DISA)

Technical Department
1800 Diagonal Road, Suite 200
Alexandria VA 22314-2852
Fax: (703) 548-7005 X-150

SECTION 2 - BUSINESS ISSUES

2.1 Implementation Considerations

SMR implementation uses the following ASC X12 Transaction Sets referenced in the EPA EDI Implementation Guideline.

863 Report of Test Results

997 Functional Acknowledgment

These transaction sets are mapped in detail in the Appendices of this document.

Future implementation of the SMR may also include transaction set 824 Application Acknowledgment, which would include any application errors, PIN number validation and a date/time receipt of the SMR. It may also include any exception reporting and violation data.

2.2 Timing of Transactions

As SMR data requirements vary for each POTW, trading partners must establish transaction timing requirements to meet their business needs. This can be done with trading partner agreements based on individual conformance criteria.

A 997 Functional Acknowledgment must be sent by the receiver of the SMR data identifying the status of the transmission. Although the 997 is used primarily for syntactical compliance checking, it also has the capability to check the validity of code values, including PIN numbers.

Until the 824 Application Acknowledgment is validated for the use in the SMR program, the 997 can be used to transmit PIN number validations. If the 997 is generated after application error checking, the 997 can be generated with an error code '7' (Invalid Code Value) in the AK403 with the invalid PIN number transmitted back in AK404. This will alert the sender that the PIN number is not valid and the transmission was not accepted by the receiver's application.

All other syntax errors would be reported in the accepted manner for a Functional Acknowledgment.

3 Modes of Operation

The two modes of operation are Production and Test. Production is used when both parties agree both systems are communicating the agreed upon data for the transaction sets implemented. The test mode is used when implementing a new transaction, when making a modification to implemented transactions, or when upgrading to a new version/release. The Trading Partners should be aware of when the test mode will be used in order to provide assistance to each other. Identification of the mode of operation is contained in the ISA (Interchange Control Header) Position ISA15, Data Element I14. A "P" identifies production data and "T" identifies test data, (refer to Section 10.2 of this document). Trading Partner systems must have the provision to handle both production and test transaction sets.

2.4 Security

The EDI process must include all steps necessary to ensure that the records are authentic, are properly authorized, and are retained in a manner that will ensure the integrity of the records. Audit trails must be maintained for accountability.

The EDI SMR uses a Personal Identification Number (PIN) that is issued, managed, and validated by each POTW. The PIN identifies the person authorizing the electronic submission of the SMR. It is equivalent to the signature of the principle executive officer on the paper SMR. It is envisioned that the PIN number be issued along with the Permit Number so that the name of the responsible party and their signature can remain on file in paper form.

Trading Partners are responsible for keeping all PINs and Value Added Network (VAN) log-on and local dial-up access numbers secure.

Further authentication and security issues are being discussed by the RIITE team and may include a system of paper-based certification and authentication procedures.

2.5 Backup and Recovery Procedures

Backup and recovery procedures are necessary to provide:

- Retransmission capabilities;
- Translator re-run capabilities;
- Minimum 24- to 48-hour immediate access backup; and Archive and recovery capabilities for individual EDI transactions.

The backup and recovery procedures must be thoroughly documented to allow anyone with the proper authority to access the system to retransmit data.

It will be up to each EDI partner to keep their own records and archives of EDI transactions sent and received. Either partner must have the capability to retransmit an EDI message.

The 997 Functional Acknowledgment transaction set can be used to provide a level of automation in the backup and recovery area. If the EDI system expects to receive a Functional Acknowledgment for every transaction it sends, the EDI message should be available for retransmissions until a 997 corresponding to a specific EDI message is received. Once the 997 Functional Acknowledgment is received, the original EDI message can be archived regardless of the normal archive timing. The Agency requires the use of the 997 Functional Acknowledgment. The 997 is used to confirm receipt of the Trading Partner's 863 transmission and indicate acceptance or rejection of the transaction set by the translator. A Functional Acknowledgment is not required for receipt of Functional Acknowledgments.

Alternative plans must be developed to accommodate extreme problems such as the loss of a data center, a local phone switch, or a catastrophic act of nature that prevents the exchange of transmissions for an extended period of time. Alternatives may include use of a different third party mailbox or direct asynchronous or bi-synchronous transmissions.

2.6 Audit Considerations

Trading Partners should maintain an adequate audit trail to ensure that they can substantiate, when needed, information exchanged electronically. In an information systems environment, an audit trail typically focuses on the transactions within the system--the data processed, input/output devices accessed, and the date and time that activities occurred. Documents in paper-form are usually available to validate information input to or output from the automated information system. In the EDI environment, paper-based documents, such as purchase orders, invoices, etc., no longer exist. Therefore, an audit mechanism for the EDI environment must be more comprehensive to substantiate the information transmitted and received electronically. An EDI audit trail is a full set of records (maintained in either electronic or paper form) documenting the data received, sent, retained, and stored. This set of records must accurately reflect the actual events as they occurred.

Trading Partners have multiple audit controls that they can take advantage of. They can use error and exception reporting as an audit mechanism to follow-up and resolve errors and exceptions. VAN reports can be used as an audit trail to substantiate EDI transmissions. VANs typically offer several different types of reports, including:

- Reports of all documents sent but not retrieved by trading partners,
- Statistical reports on all documents sent and received, and
- Receiver and sender status reports that document the status of all documents received and all documents sent.

A key audit control that Trading Partners should use is an electronic log of all their data transmissions. This log should include the batch identifier, transaction set control numbers, a date and time stamp, sender and receivers identifiers, and the status of the transmission. This log is used to ensure the integrity of the data transmitted and received. Trading Partners can use the data in this log to conduct completeness checks to ensure that all

transactions are processed. The transaction set control numbers, e.g., the control totals and unique sequence numbers in the trailer records, are used to verify that there are no duplicates or omissions.

While an audit trail is critical to ensuring the integrity of the EDI process, Trading Partners should identify their requirements for retention of the audit trail. Data must be maintained to substantiate transmissions but should not be so voluminous as to be burdensome.

SECTION 3 - LEGAL CONSIDERATIONS

3.1 General Introduction

The SMR EDI project was established to provide an option to facilities to allow electronic submissions of SMR data to POTW's. Currently, the SMR continues to be required to be submitted in paper form. Regulations as currently written require the forms and signatures.

3.2 Record Keeping

Internal control systems should be reevaluated in the context of EDI to assure responsibility for data maintenance, including audit trail, transaction reconciliation, and backup capability. The SMR record retention system must include the capability to maintain the following:

- Copies of all SMR transmissions must be retained for five years.
- SMR transactions must be retained in both the original and translated format in addition to normal application file retention.
- Transmission activity logs from the translator containing pertinent time information must be retained.
- Records must be able to be retrieved in a form that can be admissible in any judicial or other proceedings.

3.3 Authentication

The use of Personal Identification Numbers (PIN) are required on SMR EDI documents. The individual POTW will be required to administer and validate the PIN number for all SMR submissions. The PIN on the EDI SMR transmission will replace the handwritten signature requirement on the paper SMR form once the hardcopy form requirement is dropped.

3.4 Trading Partner Agreement

Trading Partner Agreements (TPAs) are an important part of any EDI system. They serve as the "interface specification" between trading partners and provide specific details of the legal agreements that define how the electronic commerce is to be conducted. Qualified legal advice is required when a TPA is drafted. At this time, no generic TPA is offered to participants.

3.5 Third-Party Agreement

When searching for a VAN provider, an agreement between the Trading Partner and a telecommunications provider should be signed. The VAN of choice must be able to maintain all the audit and security considerations.

3.6 Laws, Rules, and Regulations

When implementing EDI, users and their counsel should consider whether any special laws, rules or regulations apply to the users. Currently, there is no adequate or comprehensive source of EDI law, but there are a few sources of laws, rules and regulations that users may wish to consult. For more information, refer to the EPA EDI Implementation Guideline.

SECTION 4 - ENVIRONMENTS

4.1 System Architecture

The Trading Partner initiates the Self Monitoring Report (SMR) process by generating a SMR from either its database application or the EDI translation software. If the SMR is generated in a database application, The trading Partner needs to run an application interface program, which takes the data base output and reformats the data into an ASC X12-formatted file and loads the data into the EDI translation software. The EDI translation software translates the entered data or database generated data and translates the SMR information into the 863 Report of Test Results per the SMR EDI convention. The 863 Report of Test Results is sent by the Trading Partner through the VAN to a mailbox.

The following outline organizes the steps that are needed to report Self Monitoring Report information using EDI. This is then followed by a detailed discussion of the procedures involved in each step.

Initial SMR Data Creation

It is envisioned that the POTW's may receive the SMR data either from the reporting Industrial Facility (significant user) or directly from the testing laboratory.

In the first case, the Industrial Facility would receive the test data pertaining to their Permit requirements. The data would be either manually entered, or received directly into their application in electronic format. The data would be verified and a SMR would be generated with the proper certifications. This SMR would then be translated into an established EDI format (Transaction Set 863) and transmitted directly to the POTW.

In the latter case, the Testing Laboratory can format the test data into an established EDI format (Transaction Set 863) and transmit it directly to the POTW. The POTW could then allow the Industrial Facility to verify and certify the information electronically, either through a secure web-server or by other electronic means.

SMR Processing

The POTW will take the 863 transmission into their application and perform both compliance checking (for syntax errors) and application error checking. The application error checks are established by the POTW, and will contain, but not be limited to, PIN number validation, mandatory data validation and Permit Number validation.

Error Reporting

Transaction Set 997 Functional Acknowledgment will be used to transmit compliance checking errors back to the originator of the 863 transaction. The 997 is limited in scope to syntax errors only, and cannot effectively carry application error data. It will be necessary to examine another vehicle to carry such information, in addition to PIN number validation, date/time stamps of transactions received, etc.

Data Corrections and Amendments

The Trading Partner can retransmit a SMR 863 transaction set to replace a previously submitted SMR. The Trading Partner modifies the 863 transaction previously submitted and transmits the SMR to State, but changing the transaction type code (BTR01=05) to indicate a re-submit.

4.2 Application Integration

Application refers to the current functional processes which may or may not be automated. To take full advantage of EDI, it should become part of the functional processes and not an add-on. EDI will change the way you conduct your business. Planning for integration will reduce the impact of this change and allow a smooth transition to an environment which maximizes your return on investment. Total integration does not have to be achieved before starting EDI, but it should be an established goal. Failure to achieve integration will result in the attainment of some short-term benefits, but the real benefits which come from increased automation will be unattainable.

4.3 Translation

Translation is the automated process of converting application data in a proprietary format to X12 Standard formats for sending transactions. The process is reversed when transactions are received in the X12 formats. The core translation program uses table driven subroutines to generalize processing regardless of the actual application being processed. Specifications are taken by the program, depending on the data being processed and the particular tables associated with the transaction set. The ASC X12

standard provides a specific structure for the data. It does not affect the program design or the program function. As a consequence, there are many commercial software packages which provide core translation and other related functions that are designed to support different EDI environments.

Some of the factors to be considered when deciding whether to make or to buy translation software are the efforts required for programming, maintenance, testing, incorporating upgrades to the X12 Standard, and the development of the administrative programs necessary to satisfy EDI audits. The availability of relatively inexpensive proven commercial software packages supported by a growing industry should make development unnecessary. EDI software should be managed as system software rather than application software.

Figure 4.1.1 Self Monitoring Report

Figure 4.1.2 EDI SMR Data Flow

Figure 4.1.2 EDI SMR Data Flow (Continued)

Figure 4.1.3 Paper SMR Data Flow

SECTION 5 - MAINTENANCE

5.1 Maintaining Guidelines

Maintenance of this guideline is the responsibility of the United States Environmental Protection Agency, Information Policy Branch, Office of Policy, Planning, and Evaluation. Questions are to be referred to:

Mr. Matthew Leopard
Information Policy Branch
Office of Policy, Planning, and Evaluation
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460
(202) 260-2468

5.2 Maintaining ASC X12 Standards

ASC X12 has a standard procedure for developing new transaction sets and maintaining existing sets. Refer questions to the EPA EDI Coordinator of the Program Office responsible for the project. Should additional information be required, the question will be referred to:

Data Interchange Standards Association, Inc (DISA)
Technical Department
1800 Diagonal Road, Suite 200
Alexandria VA 22314-2852
Phone: (703) 548-7005
Fax: (703) 548-5738

5.3 Version/Release

The version/release for the transaction sets used are found on the first page of each Transaction Set appendix. ASC X12 Version 004010 will be used for this pilot.

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SECTION 6 - COMMUNICATIONS

6.1 General Introduction

The transport of information in an EDI environment may be done physically or by telecommunications. Physical means include the use of magnetic tape or courier service. Data communication means the use of a public or private telecommunications.

Each exchange method should be analyzed to determine whether or not the approach meets the Trading Partners' communication needs. No matter which approach is selected, a contingency plan should be formulated to address the possible event of a communication failure.

Issues to consider are procedures to address system failures, transmission error recovery including establishing the maximum number of retransmission attempts, security, network response time, and error reporting.

Section 6 of the EPA EDI Implementation Guideline provides an overview of the communication options available to Trading Partners planning to implement EDI.

6.2 Protocols

Protocols are a set of conventions between communicating devices. Simple protocols define only hardware configuration, more complex protocols define timings, data formats, error detection, and correction techniques. For more information on protocols, see the EPA EDI Implementation Guideline.

6.3 Point-to-Point

Point-to-point or direct connect service is communication between two trading partners. Point-to-point may employ dedicated circuits, or dial circuits, or a combination of the two. An EDI user that elects direct communication with trading partners must have the necessary in-house staff capable of managing the network and must address a number of issues with each individual trading partner.

An EDI user electing to implement direct connections must be aware that not all trading partners will have similar capabilities and therefore the trading partner may by necessity elect to use a third party service.

6.4 Internet Service Provider

An organization that provides access to the Internet. Small Internet service providers (ISPs) provide service via modem and ISDN while the larger ones also offer private line hookups (T1, fractional T1, etc.). Customers are generally billed a fixed rate per month, but other charges may apply. For a fee, a Web site can be created and maintained on the ISP's server, allowing the smaller organization to have a presence on the Web with its own domain name.

6.5 Third-Party Services

6.6 Network Interconnects

Network interconnects are a viable means of exchanging data when each Trading Partner wishes to use their preferred VAN. It is the responsibility of each partner to research whether their preferred VAN has the full complement of desired interconnect capabilities with the others, this includes the ability provide a full audit trail for tracking transmissions.

SECTION 7 - MISCELLANEOUS

7.1 Industry Business Models

The following is an overview of the Transaction Sets used in the Self Monitoring Report process. These documents mirror the information contained in the paper SMR documents. It should be noted that the electronic documents DO NOT replace any legally required paper equivalents.

Although this document presents the anticipated practice and events for the exchange of documents pertaining to the Self Monitoring Report, this document can only serve as a guide.

In commercial use of EDI trading partners do not restrict themselves to a particular exchange model, and so may extend conventions to suit their circumstance. This document however outlines the details required for meeting federally regulated reporting.

Transaction Sets

The following ASC X12 Transaction Sets are used for submitting the SMR. The detailed mapping is contained in individual appendices for each transaction set.

863 Report of Test Results

997 Functional Acknowledgment

7.2 EDI Vendor References

EDI is offered as a standard interface so trading partners, software manufacturers and value-added-networks can interact without concern for proprietary features. Trading partners must acquire the services of an X12 Translator and communications software.

EPA does not recommend or endorse any vendors translation or communication software. Listings of EDI software and service vendors can be obtained through Data Interchange Standards Association, EDI periodicals and trade journals. Several buyer's guides have been published that identify and provide details on commercially available EDI software packages.

Refer to Section 7.3 of the EPA EDI Implementation Guideline for more information regarding vendors products.

SECTION 8 - GLOSSARY OF TERMS

ANSI, American National Standards Institute.

ANSI Standard, A document published by ANSI that has been approved through the consensus process of public announcement and review. ANSI Standards are developed by committees accredited by ANSI (see ASC) and must be revisited by the developing committee within five years for updating.

Area, Transaction Set, Identifies a defined area within a transaction set containing segments. The areas may be referred to as Table 1, Table 2, Table 3 or Header, Detail and Summary.

ASC X12, Accredited Standards Committee X12. Its purpose is to develop uniform standards for electronic interchange of business documents. Membership is open to virtually all organizations and individual with a material interest in the standards.

Authentication, A process whereby the receiver of a digital message can be confident of the identity of the sender and the integrity of the message.

Compliance Checking, A checking process that is used to ensure that a transmission complies with ASC X12 syntax rules.

Component Data Element, A data element used as a sub-element in a Composite Data Structure.

Component Data Element Separator, Sometimes referred to as a sub-element separator. A unique character that precedes each Component Data Element in a Composite Data Structure. It is specified by the sender in the Interchange Control Header (ISA). The separator has a range of influence from this header to the next Interchange Control Trailer (IEA) segment. The sub-element must be different from the data element separator and segment terminator and once specified in the ISA segment must not appear in a data element value with the exception of its possible appearance in Data Element #785, Binary Data. Within diagrams, the colon (:) is used to represent the separator character. Within diagrams, the colon (:) is used to represent the separator character.

Composite Data Elements, One or more component data elements delimited by sub-element separators.

Composite Data Structure, Structure that consists of two or more logically related component data elements in a defined sequence and delimited by a Component Element Separator.

Condition Designator, An indicator assigned to each data element in a segment and defines how it is to be used in the segment. Data elements may be designated as Mandatory (M),

Optional (O) or Relational (X). Refer to the ASC X12 Standards, X Segment Directory, Introduction.

Control Segment, A control segment has the same structure as a data segment but is used for transferring control information for grouping data segments. Control Segments are Loop Control Segments (L/LE), Transaction Set Control Segments (ST/SE), and Functional Group Control Segments (GS/GE), defined in X12.6 and Interchange Control Segments (ISA/IEA,TA1) defined in X12.5.

Control Validation, Confirmation that information within the control segments is correct.

Conventions, Common practices and/or interpretations of the use of the ASC X12 standards, complying with the standards, as agreed upon by two or more trading partners. Conventions define what is included in a specific implementation of an ASC X12 standard.

Data Element, The smallest unit of information in the X12. Data elements are defined in the Data Element Dictionary, X12.3. Each data element is identified by a reference number.

Data Element Dictionary, Source document for Data Element specifications. Its official name is X12.3 Data Element Dictionary. The dictionary specifies the name, description, and minimum/maximum length for each data element. For ID-type or code type data elements, the dictionary lists all code values and their definitions or indicates in an appendix where the valid code list can be obtained.

Data Element Length, Number of character positions available to represent the data element value. A data element may be of variable length with range from minimum to maximum, or it may be of fixed length in which the minimum is equal to the maximum.

Data Element Reference Number, Reference number assigned to each data element as a unique identifier. Numbers prefixed with a "C" or an "S" indicate a Composite Data Element. Lack of a prefix indicates indicate a Simple Data Element.

Data Element Separator, A unique character preceding each data element that is used to delimit data elements within a segment. It is specified by the sender in the Interchange Control Header (ISA). The separator has a range of influence from this header to the next Interchange Control Trailer (IEA) segment. The data element separator must be different from the component or sub-element data separator and segment terminator and once specified in the ISA segment must not appear in a data element value with the exception of its possible appearance in Data Element #785, Binary Data. Within diagrams, the asterisk (*) is used to represent the separator character. See "Delimiters".

Data Element Type, An identification which describes the format of the data in the element. A data element may be one of eight types: Numeric (N), Decimal (R), Identifier (ID), String (AN), Date (DT), Time (TM), Binary (B), or Fixed Length String (FS). Refer to X12.3 Data Element Dictionary, Introduction.

Delimiters, Delimiters are bit configurations that are used as data element separators, component or sub-element separators and segment terminators. The design of X12 is based on the concept of variable lengths. Delimiters are necessary to identify the start of data elements and sub-elements and to identify the end of segments. They are specified by the sender in the Interchange Control Header (ISA). They have a range of influence from this header to the next Interchange Control Trailer (IEA) segment. Delimiters are agreed upon by the Trading Partners. The instance of the terminator must be different from the instance of the data element separator which must be different from the component (sub-element) element separator. Once specified in the ISA segment they must not appear in a data element value with the exception of its possible appearance in Data Element #785, Binary Data.

DISA, Data Interchange Standards Association. A not-for-profit organization which serves as the Secretariat for ASC X12 and the Pan American EDIFACT Board(PAEB). It is accredited by ANSI to administer the U.S. Technical Advisory Group on matters pertaining to EDIFACT syntax before the International Organization for Standardization's(ISO's) Technical Committee 154.

Direct Transmission, The exchange of data from the computer of the sending party directly to the computer of the receiving party.

SMR, The Self Monitoring Report is a form used for the periodic reporting required under 40 CFR 403.12 for continue compliance for indirect discharges.

Draft Standard for Trial Use (DSTU), A document approved by the full ASC X12 committee following membership consensus and subsequent resolution of negative votes and approved for publication by the Procedures Review Board. DSTU's must be submitted to ANSI periodically for approval as National Standards. See ANSI Standard.

EDI Translation, The conversion of application data to and from the X12 standard format.

EDI Translator, Computer software used to perform the conversion of application data to and from the X12 standard format.

Electronic Data Interchange (EDI), The computer application to computer application exchange of business information in a standard format. An EDI transmission is a highly structured message intended for automated processing by a computer. All references to EDI under U.S. EPA programs refers to the utilization of ASC X12 standards.

Electronic Envelope, Electronic package that contains a set(s) of documents sent from one sender to one receiver. See Interchange Control Segments.

Electronic Mailbox, A repository where an EDI transmission is stored for pickup or delivery. Mail boxes may be within a third-party service provider's system or in an individual trading partner's domain.

Encryption, A process of transforming clear text (data in its original, uncoded form) into ciphertext (encrypted output of a cryptographic algorithm) for security or privacy.

EPA, The Environmental Protection Agency. Also called USEPA for United States Environmental Protection Agency. Established in 1970 by Presidential executive order, it brings together parts of various government agencies involved with the control of pollution. Note that some State environmental authorities may be called EPA also, as in Illinois EPA.

FIPS PUB 161, Federal Information Processing Standard, Publication 161.

Functional Acknowledgment, A transaction set (997) transmitted by the receiver of an EDI transmission to the sender, indicating receipt and syntactical acceptability of data transmitted according to the ASC X12 standards. The functional acknowledgment allows the receiving party to report back to the sending party problems encountered by the syntax analyzer as the data is interpreted. It is not intended to serve as an acknowledgment of data content.

Functional Group, A group of one or more transaction sets enclosed by a Functional Group Header (GS) segment and a Functional Group Trailer (GE) segment. Each instance of a functional group applies to a specific business function defined by the specific application to which it applies.

Functional Group Envelope, The envelope starting with a GS (Functional Group Header) Element and terminated with a GE (Functional Group Trailer) Element.

Guideline, A document prepared by an EDI implementor that defines the use of the ASC X12 standards in the implementor's environment.

Implementation Guideline, A document prepared by an industry group, association, institute, government body or individual trading partner that defines how the ASC X12 standards are used by that industry.

Industry Conventions, A document prepared by an industry group, association, institute, etc. that defines how the ASC X12 standards are used by that industry.

Interchange, A transfer of data between trading partners.

Interchange Control Envelope, The outer envelope that holds multiple functional group envelopes in an ASC X12 transmission.

Interchange Control Segments, Segments that identify the boundaries of the ASC X12 formats in a transmission. Interchange Control Header (ISA) and Interchange Control Trailer (IEA) segments identify a unique interchange being sent from one sender to one receiver.

Interchange Control Structure, The Interchange Control Header (ISA) and Interchange Control Trailer (IEA) segments envelope one or more functional groups or interchange related control segments and perform the following functions: 1) defines the data element separators

and the data segment terminators, 2) identifies the sender and receiver, 3) provides control information for the interchange, and 4) allows for authorization and security information. (X12.5).

Level, A term used to identify hierarchical positions in an ASC X12 design. The levels used from highest to lowest are Communications, EDI Interchange, Functional Group, Transaction Set, Heading Area, Summary Area and Detail Area. Reference ASC X12 publication DSTU X12.59 Implementation of EDI Structures - Semantic Impact.

Loop, A group of segments related only by design of the transaction set. Use of any segment within a loop requires the use of the first or parent segment of the loop.

Mandatory (M), A data element/segment requirement designator that indicates that the presence of a specified data element is required.

Mapping, The process of identifying the relationship between the data elements in the standard transaction set and the data elements in the application..

Max Use, The maximum number of times a segment can be used at the location in a transaction set.

Message, Entire data stream including the outer envelope.

Message Authentication, A mechanism that allows the receiver of an electronic transmission to verify the sender of the integrity of the content of the transmission through the use of an electronic "key" or algorithm, which is shared by the trading partners.

Optional (O), A data element/segment requirement designator that indicates that the presence of a specified data element/segment is at the option of the sending party, which can be based on the mutual agreement of the interchange parties.

Personal Identification Number (PIN), A unique number assigned to a user for identification purposes.

Qualifier, A data element that identifies or defines a related element. Qualifier elements are ID Type Elements. The qualifier is a code taken from a list of approved codes.

Relational (X), See Segment Directory.

Repeating Segment, A segment that may be used more than once at a given location in a transaction set. See Max Use.

Security, System screening that denies access to unauthorized users and protects data from unauthorized uses.

Segment, Variable length set of logically related data elements in a defined sequence, a unique segment identifier (which is not a data element), one or more data elements, each preceded by a data element separator, and a segment terminator. Refer to X Segment Directory.

Segment Directory (X), The standard that provides the definitions and specifications of the segments used in the construction of transaction sets developed by ASC X12. The directory lists each segment by name, purpose, identifier, the contained data elements in the specified order, and the requirement designator for each data element.

Segment Identifier, A unique identifier for a segment composed of a combination of two or three letters or digits. The segment identifier occupies the first character positions of the segment. The segment identifier is not a data element.

Segment Terminator, A unique character appearing at the end of a segment to indicate the termination of the segment. It is specified by the sender in the Interchange Control Header (ISA). The segment terminator has a range of influence from this header to the next Interchange Control Trailer (IEA) segment. The segment terminator must be different from the data element and sub-element separators and once specified in the ISA segment must not appear in a data element value with the exception of its possible appearance in Data Element #785, Binary Data. Within diagrams, the notation "N/L" is used to represent the segment terminator.

Standards, Standards are the technical documentation approved by ASC X12, including Transaction Sets, Segments, Data Elements, Codes and Interchange Control Structures. Standards provide the structure for ASC X12.

Sub Element Separator, Sometimes referred to as a Component Data Element Separator. A unique character that precedes each Component Data Element in a Composite Data Structure. It is specified by the sender in the Interchange Control Header (ISA). The separator has a range of influence from this header to the next Interchange Control Trailer (IEA) segment. The sub-element must be different from the data element separator and segment terminator and once specified in the ISA segment must not appear in a data element value with the exception of its possible appearance in Data Element #785, Binary Data. Within diagrams, the colon (:) is used to represent the separator character.

Syntax, The grammar or rules that define the structure of the EDI standards (i.e., the use of loops, qualifier, etc.). Syntax rules are published in ANSI X12.6.

Trading Partner Agreement (TPA), Contractual agreements between two entities that contemplate trading electronically.

Trading Partner, The sending and/or receiving party involved in the exchange of electronic data interchange transmissions.

Transaction Set, The transaction set unambiguously defines, in the standard syntax, information of business or strategic significance and consists of a transaction set header segment, one or more data segments in a specified order, and a transaction set trailer segment.

Transaction Set ID, An identifier that uniquely identifies the transaction set. This identifier is the first data element of the transaction set header segment.

Translation, The act of accepting documents in other than X12 standard format and converting them to the X12 standard format.

Transmission Control, Defines how information is transmitted across communications lines and includes routing and recommendations.

VAN, Value Added Network. Third-party service organizations.

Version/Release, Identifies the publication of the standard being used for the generation or the interpretation of data in the X12 standard format. May be found in the Functional Group Header Segment (GS) and in the Interchange Control Header Segment (ISA). (E.g., Version 004010 means Version 4 Release 1.) See Control Segment.

X12, The ANSI committee responsible for the development and maintenance of standards for Electronic Data Interchange (EDI).

X12.5, Interchange Control Structures. This standard defines the control structures, the interchange envelope of a header (ISA) and trailer (IEA) for the electronic interchange through a data transmission, and it provides a structure to acknowledge the receipt and processing of this envelope.

X12.6, Application Control Structure. This standard defines the structure of business transactions for computer-to-computer interchange.

SECTION 9 - FORMS AND DOCUMENTS

9.1 ASC X12 Transactions

The SMR EDI Project complies with the ASC X12 standards for Electronic Data Interchange. The EPA SMR process supports the following ASC X12 standards at this time:

- ISA/IEA, GS/GE, ST/SE Header and Trailer Formats;
- 863 Report of Test Results (X12.41);
- 997 Functional Acknowledgment

9.1.1 Header/Trailer Format

The EPA has defined the elements to be used in the Interchange Control Header/Trailer (ISA/IEA), Functional Group Control Header/Trailer (GS/GE), and the Transaction Set Header/Trailer (ST/SE) for all transmissions to and from the State Program Office.

The interchange header and trailer segments envelop one or more functional groups or interchange related control segments and perform the following functions:

- Define the data element separators, sub-element separators and data segment terminators;
- Identify the sender and receiver;
- Provide control information for the interchange; and
- Allow for authorization and security information.

9.1.2 863 Report of Test Results Transaction Set

The 863 Report of Test Results transaction set is used to reproduce the Self Monitoring Report. The transaction set has two functions: the first captures the information as it appears in hard copy and the second generates a flat file for the POTW's.

9.2 ASC X12 Documents

The following ASC X12 documents should be referenced for additional information standard format and implementation issues.

ASC X12 Draft Standards
Version 004 Release 010
Document Number ASC X12S/97-372
Available through:

Data Interchange Standards Association, Inc. (DISA)
1800 Diagonal Road, Suite 200
Alexandria, VA 22314-2852
Phone: (703) 548-7005
FAX: (703) 548-5738

9.3 Sample of SMR form

Facility Name _____

—

Facility Address _____

—

—

Contact Name _____ Phone# _____

Fax _____ E-mail _____

Permit Number _____

Report Period: From _____ Through _____

Outfall Number/ Sampling Point	Average Daily Flow	Maximum Daily Flow	Measured or Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated
			<input type="checkbox"/> Measured <input type="checkbox"/> Estimated

I also certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SMR EDI IMPLEMENTATION GUIDELINE

Signature of Responsible Corporate Officer/Designated Official

Date

Printed Name

Title

SMR EDI IMPLEMENTATION GUIDELINE

Outfall Number/Sampling Point: _____

Parameter	Sample Date/Time	Sample Type	Preservative Used	Analytical Method	Lab Sample #	Analytical Results	Units	Regulated Limit

No Solvent Dumping and TOMP Implementation Certification

Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewater has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan (TOMP) submitted to the City of Metropolis.

Signature of Responsible Corporate Officer

Date

Printed Name

Date

9.5 Mapping of SMR Data Items to ASC X12 Segments

Table 1 represents the listing of field information in the order that it appears in the EDI SMR. Presented in the table is the associated ASC X12 Segment and Looping Hierarchy selected for describing the data in the ASC X12 format.

TABLE 1

EDI Segment	EDI Loop	Table or Note	Column or Note	Data Entity/Field Name	Notes
GS01			'TR'	Functional ID	
GS02			Not Used	Sender ID	
GS03			Not Used	Receiver ID	
GS04			Not Used	Group Date	
GS05			Not Used	Group Time	
GS06			Not Used	Group Control Number	
GS07			'X'	Standard Body	
GS08			'004010'	Version Release	
ST01			'863'	Segment ID	
ST02			Calculated	TSCN	
BTR01		TRXTYPE	00 = Original 05 = Replace	Document edit code	05 replaces entire SMR.
BTR02			SMR creation date	Date	
BTR03			SMR creation time	Time	
BTR04		SMR	ZZ = Self Monitoring Report A5 = Annual Roll-Up Type Report	Report type code	Code not yet in X12
BTR05			Mandatory	Reference #	Report reference # created by sender.
BTR06				Reference #	Reference # of transaction replaced if BTR01=05.
NTE01			NCD = Non-conformance Specification TMP = Toxic Organic Plan ZED = Zero Discharge ZSU = Zero Solvent Used	Note/Special Instruction	Certifications
NTE02			Text	Free Form Message	Type of Certification

SMR EDI IMPLEMENTATION GUIDELINE

EDI Segment	EDI Loop	Table or Note	Column or Note	Data Entity/Field Name	Notes
DTM01		MVDT	090 = Report begin 091 = Report end 458 = Certification (Signature Date)	Date/time qualifier	Monitoring period begin date. Monitoring period end date. Signature date
DTM02		CCYYMMDD		Date	
N101	N1		8D = Permit holder VI = Contact person VU = Second Contact Organization ZD = Recipient name	Entity ID code	
N102	N1		Free form name of entity	Name	
N103	N1	Plant	94 = Code assigned by the organization that is the ultimate destination of the transaction set.	ID code qualifier	Used when N101=ZD to specify a mail code.
N104	N1			ID code	Code from Region/State Route List when N101=ZD
N105	N1		Not Used	Entity relationship code	
N106	N1		Not Used	Entity identifier code	
REF01	N1		PN = Permit #	Reference number qualifier	
REF02	N1		Permit number of permit holder	Reference number	
PER01	N1/PER	Certifier / Principle Executive Officer or other Authorized Agent	AA = Authorized Representative CE = Certifier	Contact function code	
PER02	N1/PER		Text	Name	
PER03	N1/PER		TE = Telephone Number	Communication # qualifier	
PER04	N1/PER		Complete Telephone #	Communication #	Include country and/or area code if applicable. (No spaces or Dashes)
PER05	N1/PER		FX = Facsimile	Communication # qualifier	
PER06	N1/PER			Communication #	Complete fax # number
PER07	N1/PER		EM= Electronic Mail	Communication # qualifier	

SMR EDI IMPLEMENTATION GUIDELINE

EDI Segment	EDI Loop	Table or Note	Column or Note	Data Entity/Field Name	Notes
PER07	N1/PER			Communication #	Complete e-mail address
REF01	N1/PER/REF		4A = PIN	Reference number qualifier	
REF02	N1/PER/REF		The appropriate PIN	Reference number	
LIN01	LIN			Assigned ID	Sequential number that identifies iteration of the loop.
LIN02	LIN		P5 = Material discharge number.	Product/Service ID qualifier	
LIN03	LIN		Discharge #	Product/Service ID	Value Representing Discharge number
NTE01	LIN		NCD = Non-conformance Specification	Note/Special Instruction	
NTE02	LIN		Text	Free Form Message	
PID01	LIN		S = Structured from industry code list	Item description type	PID Segment is optional, for Pipe Level No Discharges.
PID02	LIN		08 = Product 68 = Chemistry ST= Sample Type 88 = Flow	Product/Process character code	At least one of "08" or "88" is required for each iteration of the LIN loop.
PID03	LIN		EP = U.S. EPA	Agency qualifier code	
PID05	LIN		Description	Description	
TDM01	LIN		RM = Results Methods		This code indicates analytical method used
TDM02	LIN		EP = U.S. EPA	Agency Qualifier Code	
TDM03	LIN			Product Description Code	
MEA01	LIN		CT = Counts TR = Test Results	Measurement reference ID code	
MEA02	LIN		COT = Content FR = Flow Rate	Measurement qualifier	
MEA03	LIN	REXC	Number of excursions value	Measurement value	
MEA04	LIN			Composite unit of measure	The Flow Rate can either be in gallons per day or million gallons per day

SMR EDI IMPLEMENTATION GUIDELINE

EDI Segment	EDI Loop	Table or Note	Column or Note	Data Entity/Field Name	Notes
C00101	LIN		1N = Count CE = Centigrade, Celsius FA = Fahrenheit H5 = pH scale for acidity MH Microns (Micrometers) N7 = Parts	Unit or Basis for Measurement Code	
MEA07	LIN		03 = Approximately 06 = Greater than 07 = Less than 46 = Average 44 = Estimated calculated value based on average parameter or standard 97 = Maximum ZZ = Regulated limit	Measurement attribute code	
DTM01	LIN		615 = Date Acquired	Date/Time Qualifier	Date Sample was taken
DTM02	LIN			Date	
DTM03	LIN			Time	
REF01	LIN		X0 = Sample Number	Reference Identification Qualifier	Lab Sample Number
REF01	LIN			Reference Identification	
NTE01	LIN		NCD = Nonconformance	Note Reference Code	Nonconformance Specification Statement:
NTE02	LIN			Description	
SE				Transaction set trailer	Must be same value as ST02.

SECTION 10 - AGENCY CONVENTIONS, INTERCHANGE CONTROL & TRANSACTION SETS

10.1 Introduction

Section 10 contains the descriptions of the information used in the Interchange Header (ISA), Interchange Trailer (IEA), Group Start (GS), Group End (GE), and the control segments.

To help understand how the standards work, it is useful to begin by defining some terminology and explaining some of the components that make electronic communications possible. It is important to note that in the transaction set implementation guidelines all text shown in italics is an EPA Convention. Non-italicized text contain definitions and comments directly from the X12 standards.

A "*transaction set*" is the term used in business data interchange to describe the electronic transmission of a single document (Purchase order, Self Monitoring Report, Shipping Notice, etc.) between one organization's computer and the computer of the other trading partner. The data included in a transaction set conveys the same information as a conventional printed document.

A *transaction set* generally but not always, consists of three areas - Header or Table 1, Detail or Table 2, and a Summary or Table 3. The *Header Area* contains information that is of an administrative nature and pertains to the entire document (document dates, identities, names of contacts, etc.). The *Detail Area* is used to convey the actual business transaction such as quantities, prices, items. Data in the Detail Area overrides equivalent Header Area data (i.e. if a contact is specified in the Header and another contact is specified with a single item, the second contact takes priority). The *Summary Area* contains control information and may contain other data that relates to the entire transaction.

The data element is the smallest named unit of information in the standard. Data elements are identified as either simple or component. A data element that occurs as an ordinarily positioned member of a composite data structure is identified as a component data element. A data element that occurs in a segment outside the defined boundaries of a composite data structure is identified as simple data element. The distinction between simple and component data elements is strictly a matter of context since a data element can be used in either capacity.

A transaction set is made up of data segments which convey business information which are grouped in logical units. A transaction set generally but not always, consists of three areas - Header or Table 1, Detail or Table 2, and a Summary or Table 3. The

Header Area contains information that is of an administrative nature and pertains to the entire document (document dates, identities, names of contacts, etc.). The Detail Area is used to convey the actual business transaction such as quantities, prices, item. Data in the Detail Area overrides equivalent Header Area data (i.e. if a contact is specified in the Header and another contact is specified with a single item, the second contact takes priority). The Summary Area contains control information and may contain other data that relates to the entire transaction.

EDI transmissions are created from information extracted from internal information systems, translated into ASC X12 format and punctuated with control characters.

N1*PERMIT HOLDER*PERMIT HOLDER NAME*
PER*CERTIFIER*CERTIFYING PARTY NAME*TEL*(222)555-1212

The ASC X12 format requires each element be separated by an element separator and the last element be followed by a segment terminator. Graphic representations of the control characters usually use the asterisk (*) as a element separator, new line (N/L) as the segment terminator and a colon(:) as a sub-element separator.

The segment in an actual transmission would appear as:

N1*8D*PERMIT HOLDER NAME N/L
PER*CE*CERTIFIER NAME*TE*222-5551212 N/L

In the ASC X12 code list "8D" is the Entity Identifier Code for Permit Holder, "CE" is the Contact Function Code for Certifier and "TE" is the Communication Number Q and "CT" is the product identification qualifier for carton.

The following list identifies terms associated with data segments and provides references to codes and terms used in the X12 standard. The actual transmission does not include all of the listed items as only the segment identifier characters, the values for each data element, the data element separators and the segment terminator characters are transmitted.

Segment Identifier, Two or three characters assigned to identify the segment. The identifier occupies the first character positions of the segment.

Data Element Reference Number, A number assigned to the data element to provide a reference to the ASC X12 Data Dictionary which defines specifications for each data element.

Data Element Reference Designator, A structured code assigned to each data element in a segment to indicate its unique position in the segment. It is composed of the segment identifier and its sequential position within the segment.

Data Element Name, This is the name assigned to the data element in the ASC X12

Data Dictionary.

Attributes, Each data element has three ASC X12 attributes: element usage or Condition Designator, data element type, and Minimum/Maximum length.

Condition Designator

- | | |
|----------|---|
| M | Mandatory
The element is required to appear in the segment. |
| O | Optional
Appearance of the data element is at the option of the sending party or is based on the mutual agreement of the trading partners. |
| X | Relational
Condition that may exist between two or more data elements based on the presence or absence of one of the data elements. Additional codes are used to identify the condition i.e. P - Paired or Multiple, R - Required, E - Exclusion, C -Conditional, or L - list Conditional. Refer to the X12 Standards Manual, Introduction to X12.22 Segment Directory. |

Relational conditions are described in codified syntax notes within a segment. Syntax notes will reference the condition and the corresponding reference identifiers that are affected. The various types of relational conditions are described below:

- “P” Paired. If either AA or BB are present, then both must be present
- “R” Required. Either AA or BB are required.
- “C” Conditional. IF AA is present, then BB is required.
- “L” List Conditional. IF AA is present, then BB and CC are required.
- “E” Exclusion. Only one of AA or BB may be present.

Data Element Type

- | | |
|-----------|---|
| ID | Identifier
The data element must always contain a value from a predefined list of values that is maintained by X12 or by other bodies that are recognized by X12 and identified by reference in Appendix A in the Data Element Dictionary. The value is left justified. Trailing spaces should be suppressed. |
| AN | String
Alpha-numeric sequence of characters containing at least one |

non-space character. The significant characters must be left justified. Leading spaces, if used are assumed to be significant characters. Trailing spaces should be suppressed.

FS Fixed Length String

A sequence of any letters, spaces, and/or special characters with spaces filled, if necessary, to satisfy minimum length.

DT Date

The format is CCYYMMDD where CC is the century ,YY is the Year, MM is the month and DD is the day of the month.

TM Time

Values for a time-type data element are in the HHMMSSd.d format expressed using the 24-hour clock. HH expresses the hour(00-23), MM expresses the minute(00-59), SS the seconds(00-59), and d.d is the numeric expression of decimal seconds.

Nn Numeric

Numeric data element where N indicates a numeric and "n" indicates the decimal places to the right of a fixed, implied decimal point. The decimal point is not transmitted in the character stream. If the max length of the data element was five position and the Type was N2, the values sent would always have two decimal positions; an N0 would contain no decimal positions.

R Decimal

A numeric data element where the decimal point is optional for integer values, but required for fractional values. Leading zeros should be suppressed unless necessary to satisfy a minimum length requirement. The decimal point and the minus sign when transmitted are not counted when determining the length of the data element value. If the max length of the data element was three positions, the following represent the values that could be sent: NNN, .NNN, N.NN, NN.N, -N.NN, etc.

B Binary

Any sequence of octets ranging in value from binary 00000000 to binary 11111111. Binary may only exist in the BIN Segment.

Minimum/Maximum, This is the range, minimum to maximum, of the number of character positions available to represent the data element value. It may be of variable length with a minimum to maximum, or it may be of fixed length in which the minimum is equal to the maximum.

10.2 X12 EDI Transmission Control Structure

The X12 Transmission is a hierarchical structure of headers and trailers to allow transaction sets of different types to be transmitted in the same transmission and allows the data to be separated or segregated logically for easy interpretation and internal routing by the receiver.

Transaction sets begin with an ST segment and end with an SE segment. Multiple transaction sets of the same functional group are transmitted together beginning such a group with a GS (Group Start) and ending with a GE (Group End) segment. One or more functional groups are bound together for transmission within an interchange envelope that starts with an ISA segment and ends with an IEA segment. There are

other segments available for Security and Interconnect control when using the services of third party communications providers (VANS).

The *interchange control structure* is the interchange envelope consisting of a Header (ISA) and a Trailer (IEA) for the electronic interchange through a data transmission, and provides a structure to acknowledge the receipt and processing of the envelope.

The ISA and the IEA envelope one or more functional groups or interchange-related control segments and perform the following functions:

- Define the segment terminator, and the element and sub-element separators.
- Identify the sender and receiver,
- Provide control information for the interchange, and
- Allow for authorization and security information.

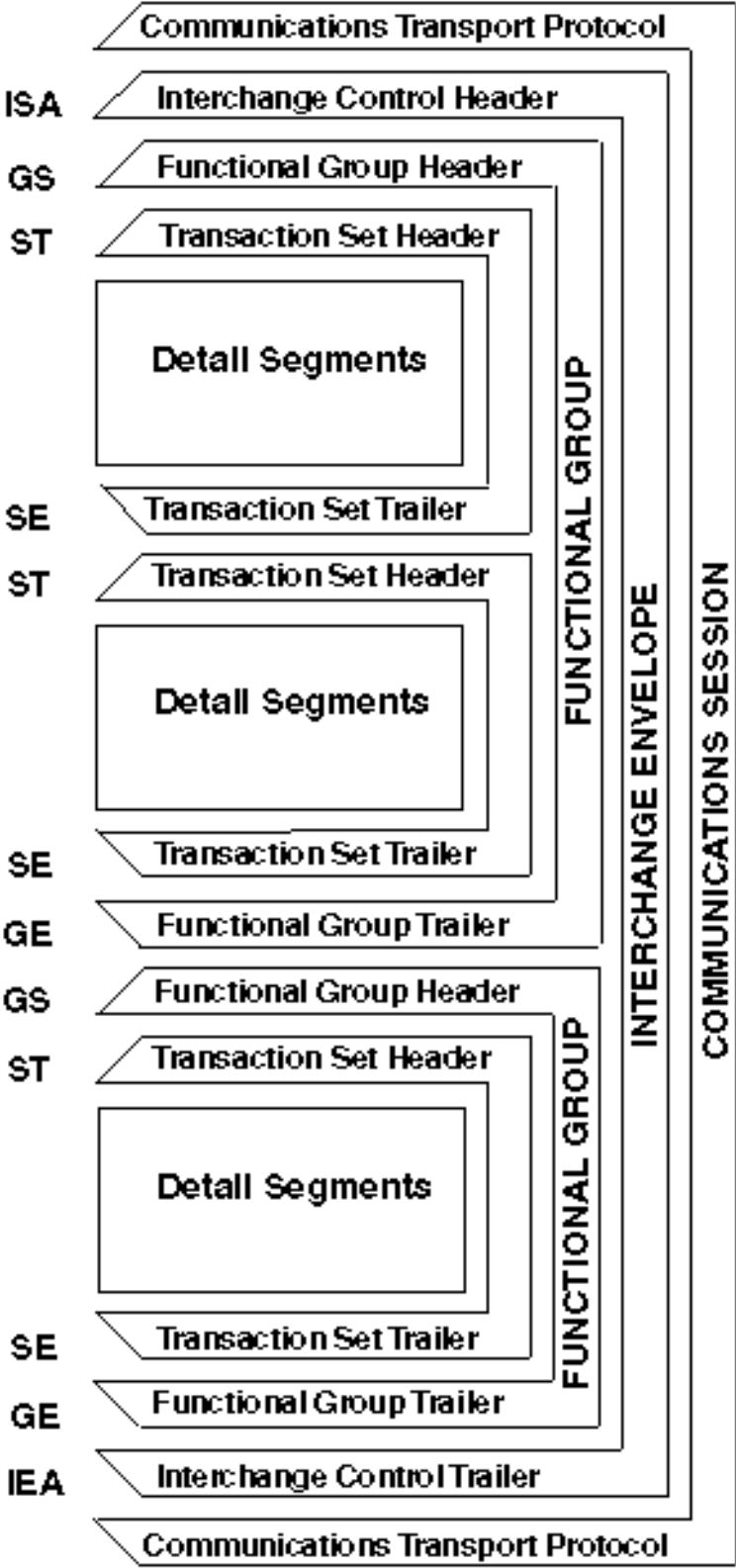
The GS and GE envelope transactions sets of the same type. Each type of transaction is contained in a separate Functional Group to allow the receiver to parse the information to the appropriate application. The GS segment provides the identity of the Version and Release of the standard used to create the transaction. Both the GS and the GE provide control information to ensure the validity of the interchange.

Every transaction set begins with an ST (Transaction Start) segment and is ended with a SE (Transaction End) segment.

Translators normally strip off the ISA/IEA and GS/GE segments during translation. It is the responsibility of the trading partners to make provision to archive the transmissions before and after translation to satisfy EDI Audit Requirements.

The structures of the transaction set and functional group headers and trailers are found in the Segment Directory. The structures of the interchange control header and trailer are found in the Interchange Control Structures section of any current version of the ASC X12 Standards.

Schematic of an EDI Transmission



See the following EDI Transmission schematic. The schematic illustrates a typical format for electronically transmitting a series of diverse business transactions. **10.2.1 Control Segments**

ICS Interchange Control Structures

Functional Group ID=

Introduction:

The purpose of this standard is to define the control structures for the electronic interchange of one or more encoded business transactions including the EDI (Electronic Data Interchange) encoded transactions of Accredited Standards Committee X12. This standard provides the interchange envelope of a header and trailer for the electronic interchange through a data transmission, and it provides a structure to acknowledge the receipt and processing of this envelope.

Notes:

The functional group is not an interchange component of this standard but appears here to establish positioning for the functional groups.

The following symbols are found in the convention:

> > indicates a required element
X indicates an element not used

	Pos. No.	Seg. ID	Name	Req. Des.	Max.Use	Loop Repeat	Notes and Comments
	010	ISA	Interchange Control Header	M	1		
Not Used	020	TA1	Interchange Acknowledgment	O	1		
	030	GS	Functional Group Header	O	1		
	040	GE	Functional Group Trailer	O	1		
	050	IEA	Interchange Control Trailer	M	1		

Segment: **ISA** Interchange Control Header

Position: 010

Loop:

Level:

Usage: Mandatory

Max Use: 1

Purpose: To start and identify an interchange of zero or more functional groups and interchange-related control segments

Syntax Notes:

Semantic Notes:

Comments:

Notes: The actual value of the data element separator, the sub-element separator, and the segment terminator for all the segments following this ISA (that starts this communication) through the IEA (that completes the transmission) are established in the ISA. Byte 4, following the three bytes that comprise the ISA (the identification of this header) is used to separate the remaining elements in this and all succeeding data elements through the end of the IEA. This implementation guide uses the asterisk (*) as the graphic representation of the data element separator. It also is the sub-element separator through the end of the IEA. This implementation guideline uses the colon (:) as the graphic representation of the sub-element separator. The value at the last position of the ISA establishes the segment terminator for the communication through the end of the IEA. The ISA consists of fixed length fields, therefore the segment terminator will be the 106th byte or the first byte after data element ISA16. This implementation guideline uses N/L as the graphic representation of the segment terminator.

The control characters selected as the segment separator, sub-element separators and the segment terminators must be characters that will not be data characters within the communication. Acceptable characters, in hexadecimal notation are HEX 04, HEX 0D, HEX 4F, HEX 1C, or HEX 15.

Example:

```
ISA*00*xxxxxxxxxx*00*xxxxxxxxxx*01*123456789xxxxxx*90*057949910002Pxx*950704*2300*U*00304*000000789*0*P*:N/L
```

Data Element Summary

Ref. Des.	Data Element	Name	Attributes
> >	ISA01	I01 Authorization Information Qualifier	M ID 2/2
		Code to identify the type of information in the Authorization Information.	
		00 No Authorization Information Present (No Meaningful Information in I02)	
> >	ISA02	I02 Authorization Information	M AN 10/10
		Information used for additional identification or authorization of the interchange sender or the data in the interchange; the type of information is set by the Authorization Information Qualifier (I01)	
		This element is fixed field length. It must be space filled.	
> >	ISA03	I03 Security Information Qualifier	M ID 2/2

			Code to identify the type of information in the Security Information.		
			00	No Security Information Present (No Meaningful Information in I04)	
> >	ISA04	I04	Security Information		M AN 10/10
			This is used for identifying the security information about the interchange sender or the data in the interchange; the type of information is set by the Security Information Qualifier (I03)		
			This element is fixed length. It must be space filled.		
> >	ISA05	I05	Interchange ID Qualifier		M ID 2/2
			Qualifier to designate the system/method of code structure used to designate the sender or receiver ID element being qualified.		
			01	Duns (Dun & Bradstreet)	
			09	X.121 (CCITT)	
			16	Duns Number With 4-Character Suffix	
> >	ISA06	I06	Interchange Sender ID		M AN 15/15
			Identification code published by the sender for other parties to use as the receiver ID to route data to them; the sender always codes this value in the sender ID element		
> >	ISA07	I05	Interchange ID Qualifier		M ID 2/2
			Qualifier to designate the system/method of code structure used to designate the sender or receiver ID element being qualified.		
			01	Duns (Dun & Bradstreet)	
			09	X.121 (CCITT)	
			16	Duns Number With 4-Character Suffix	
> >	ISA08	I07	Interchange Receiver ID		M AN 15/15
			Identification code published by the receiver of the data. When sending, it is used by the sender as their sending ID, thus other parties sending to them will use this as a receiving ID to route data to them.		
			For the SMR, this is the EPA Duns number for a particular application.		
> >	ISA09	I08	Interchange Date		M DT 6/6
			Date of the interchange.		
> >	ISA10	I09	Interchange Time		M TM 4/4
			Time of the interchange.		
> >	ISA11	I10	Interchange Control Standards Identifier		M ID 1/1
			Code to identify the agency responsible for the control standard used by the message that is enclosed by the interchange header and trailer.		
			U	U.S. EDI Community of ASC X12, TDCC, and UCS	
> >	ISA12	I11	Interchange Control Version Number		M ID 5/5
			This version number covers the interchange control segments.		

It does not establish the Version/Release for the transactions which follow. That Version/Release is established by the GS (Functional Group Header) preceding the transactions.

004010 Draft Standard for Trial Use Approved for Publication by
ASC X12 Procedures Review Board, October, 1997

> > **ISA13 I12 Interchange Control Number M N0 9/9**

A control number assigned by the interchange sender

Together with the sender ID it uniquely identifies the interchange data to the receiver. It is suggested that the sender, receiver, and all third parties be able to maintain an audit trail or interchanges using this number. The number is suggested to start with 000000001 and be incremented by 1 for each subsequent ISA between the sender and receiver. It must match the number in IEA02.

> > **ISA14 I13 Acknowledgment Requested M ID 1/1**

Code sent by the sender to request an interchange acknowledgment (TA1)

0 No Acknowledgment Requested

> > **ISA15 I14 Test Indicator M ID 1/1**

Code to indicate whether data enclosed by this interchange envelope is test or production.

P Production Data

T Test Data

> > **ISA16 I15 Component Element Separator M AN 1/1**

This field provides the delimiter used to separate component data elements within a composite data structure; this value must be different than the data element separator and the segment terminator

Segment: **GS** **Functional Group Header**
Position: 030
Loop:
Level:
Usage: Optional
Max Use: 1
Purpose: To indicate the beginning of a functional group and to provide control information
Syntax Notes:
Semantic Notes:
Comments:

Notes: The GS segment establishes the Version/Release for the transaction sets between it and the GE (Group End) segment.

Example: GS*123456789*873186902*19980115*2300*1*X*004010 N/L

Data Element Summary				
Ref. Des.	Data Element	Name	Attributes	
> >	GS01	479	Functional Identifier Code	M ID 2/2
		Code identifying a group of application related Transaction Sets.		
		FA	Functional Acknowledgment (997)	
		RT	Report of Test Results (863)	
> >	GS02	142	Application Sender's Code	M AN 2/15
		Code identifying party sending transmission. Codes agreed to by trading partners.		
> >	GS03	124	Application Receiver's Code	M AN 2/15
		Code identifying party receiving transmission. Codes agreed to by trading partners.		
> >	GS04	373	Date	M DT 8/8
		Date (CCYYMMDD).		
		Date sender generated a functional group of transaction sets.		
> >	GS05	337	Time	M TM 4/6
		Time expressed in 24-hour clock time as follows: HHMM, or HHMMSS, or HHMMSSD, or HHMMSSDD, where H = hours (00-23), M = minutes (00-59), S = integer seconds (00-59) and DD = decimal seconds; decimal seconds are expressed as follows: D = tenths (0-9) and DD = hundredths (00-99)		
		Time (HHMM) when the sender generated a functional group of transaction sets (local time at sender's location).		
> >	GS06	28	Group Control Number	M N0 1/9
		Assigned number originated and maintained by the sender.		
		It is suggested the Group Control Number start with 000000001 and increment by 1 for each subsequent GS in the communication.		
> >	GS07	455	Responsible Agency Code	M ID 1/2
		Code used in conjunction with Data Element 480 to identify the issuer of the standard.		

		X	Accredited Standards Committee X12	
> >	GS08	480	Version / Release / Industry Identifier Code	M AN 1/12
			Code indicating the version, release, subrelease, and industry identifier of the EDI standard being used, including the GS and GE segments. If code in DE455 in GS segment is X, then in DE 480 positions 1-3 are the version number; positions 4-6 are the release and subrelease, level of the version; and positions 7-12 are the industry or trade association identifiers (optionally assigned by user). If code in DE455 in GS segment is T, then other formats are allowed.	
			The release used for the SMR 863 is 004010.	
		004010	Draft Standards Approved for Publication by ASC X12 Procedures Review Board	

Segment: **GE** **Functional Group Trailer**
Position: 040
Loop:
Level:
Usage: Optional
Max Use: 1
Purpose: To indicate the end of a functional group and to provide control information
Syntax Notes:
Semantic Notes:
Comments:
Notes: Example: GE*9*1 N/L

Data Element Summary						
	Ref. Des.	Data Element	Name	Attributes		
> >	GE01	97	Number of Transaction Sets Included	M	N0	1/6
			Total number of transaction sets included in the functional group or interchange (transmission) group terminated by the trailer containing this data element.			
> >	GE02	28	Group Control Number	M	N0	1/9
			Assigned number originated and maintained by the sender.			

Segment:	IEA Interchange Control Trailer
Position:	050
Loop:	
Level:	
Usage:	Mandatory
Max Use:	1
Purpose:	To define the end of an interchange of zero or more functional groups and interchange-related control segments
Syntax Notes:	
Semantic Notes:	
Comments:	
Notes:	Example: IEA*000000789 N/L

Data Element Summary						
	Ref. Des.	Data Element	Name	Attributes		
> >	IEA01	I16	Number of Included Functional Groups	M	N0	1/5
			A count of the number of functional groups included in an interchange			
> >	IEA02	I12	Interchange Control Number	M	N0	9/9
			A control number assigned by the interchange sender			
			Together with the sender ID, it uniquely identifies the interchange data to the receiver. It is suggested that the sender, receiver, and all third parties be able to maintain an audit trail of interchanges using this number. This number must agree with the number in ISA12.			

APPENDIX A

How To Get Started With Electronic Data Interchange (EDI)

This is a check list for implementing EDI for the Self Monitoring Report (SMR) process. EDI is the computer-to-computer (application-to-application) interchange of predesignated message types in standardized formats. The purpose of the SMR EDI process is to electronically submit SMRs to the POTW's.

Check List For Pilot Participants

1. Start Up

Contact your ----- to get materials and set up a schedule. Materials include the SMR Implementation Guideline and EDI software. The schedule will include the following tasks.

2. Orientation Meeting

Meet with the EDI coordinator for group orientation. The meeting will give an overview of EDI and specific instructions on how to install and use the provided software.

3. Equipment Setup

To operate the EDI SMR system, it is suggested that your microcomputer have the following:

- KB RAM
- MB Hard Drive
- 1 Floppy drive
- Internal or External Modem
- Operating System version ----

In addition, you must have access to a data line. Most EDI systems are stand-alone, but the software may be configured to run on a Local Area Network (LAN) and use LAN modems.

4. Installation

Install software and test communication facilities. The EDI coordinator will provide assistance if needed.

5. Test Transmissions

Enter and transmit several SMR forms to assure that the process works correctly.

6. Operations Mode

Once you are assured that the transmissions are reliable, begin to send real SMR data to your POTW, or your trading partner. Due to the paper requirements for the SMR, you will still be required to follow the procedure of forwarding the paper reports to the POTW during the pilot.

7. Evaluation

Evaluate the effort for reliability, data accuracy and time savings.

Check List For POTW

1. Feasibility Analysis

Initial analysis is important to the success of the EDI implementation. The following issues should be considered before starting the implementation.

- . Funding
- . Level of interest in the reporting community
- . Regulatory language - determine legal applicability of electronic submission
- . Information systems support - determine effort needed to manage SMR data. Identify the applicable in-house applications and develop an interface to the EDI translation software. If no system already exists, consider building or buying software to manage the data.

2. Select Pilot Participants

Identify good candidates for pilot participation. The EDI coordinator can contact them and introduce them to the pilot.

3. Set up EDI Hardware and Software

The EDI coordinator will provide and set up the EDI software, establish a communication service, and provide technical support for the Program Office. This may require some coordination with internal information systems. The POTW should have access to a microcomputer, and become familiar with using the EDI software.

4. EDI Orientation

Each pilot participant should attend an orientation meeting to introduce them to the technology and give them specific instructions for using the software. The EDI coordinator will conduct the meeting.

5. Test Reception

The EDI coordinator will test your EDI system by receiving several SMRs from the same or another system. SMRs must be received reliably before the pilot participants start transmitting.

6. Organize SMR Data

Become familiar with a tool for managing S MR data. This is software developed in-house, purchased, or provided by the EDI coordinator. Make sure you can at least add, remove, find and view SMR records from the database.

7. Schedule Participants

The EDI coordinator will setup a schedule with the pilot participants. For each pilot participant, schedule a time to:

- . Do a test transmission,
- . Begin sending "live" SMRs.

8. Receive Test SMR

The EDI coordinator will assist each pilot participant in setting up and testing their EDI system. Once a pilot sight has EDI equipment set up and configured, they should create several dummy SMRs and attempt to send them via EDI. At the -----, these test SMRs can be received and verified.

9. Receive Operational SMRs

Once a pilot participant's system is setup and tested, they may begin to send real SMRs. They must also continue the current procedure of sending paper forms.

10. Evaluation

Evaluate the process of electronic submission for reliability, data accuracy and time savings.

APPENDIX B

B.1 Functional Acknowledgment - Transaction Set 997

PURPOSE: This implementation of this 997 Functional Acknowledgment is transmitted as a return receipt to indicate the acceptance or rejection of a 863 Report of Test Results used for the submission of the Self Monitoring Report to the POTW. This acceptance/rejection applies only to the ability of submitted data to be translated under the X12 implementation convention for this reporting. This transaction in no way reflects on the validity of the data translated.

A Functional Acknowledgment indicating acceptance of a 863 transmission establishes the "Received Date".

TIMING: A 997 Transaction Set is generated and returned to the Trading Partner at the completion of the translation of an inbound 863 Transaction Set.

TRANSACTION SET: ASC X12 Functional Acknowledgment (997),
Version/Release 004010.

NOTE: The following symbols are found in the convention:

- > > indicates a required element
- x indicates an element no used

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B.2 997 Functional Acknowledgment Detail Mapping

This example is based on receipt of a transmission containing 3 reports (transaction set 863 - Report of Test Results); two were correct; the third had an error in the eighth segment, a PER which contained an invalid code in the second data element (DE 366).

POS SEGMENT/ELEMENT INFORMATION
DE#

010 ST*997*0001 N/L
Transaction Set Header

143	ST01 997	Transaction Set ID Code. 997 - Functional Acknowledgment
-----	----------	---

329	ST02 0001	Transaction Set Control Number.
-----	-----------	---------------------------------

020 AK1*RT*2 N/L
Functional Group Response Header

479	AK101 RT	Transaction Set Purpose . RT - Report of Test Results (863)
-----	----------	--

28	AK102 2	Group Control Number (from GS06 of the functional group being acknowledged)
----	---------	--

030 AK2*863*0001 N/L
Transaction Set Response Header

143	AK201 863	Transaction Set Identifier Code 863 - Report of Test Results
-----	-----------	---

329	AK202 0001	Transaction Set Control Number (from ST02 of the transaction set being acknowledged)
-----	------------	--

060 AK5*A N/L**Transaction Set Response Trailer**

717 AK501 A Transaction Set Acknowledgment Code
A - Accepted

030 AK2*863*0002 N/L**Transaction Set Response Header**

143 AK201 863 Transaction Set Identifier Code
863 - Report of Test Results

329 AK202 0002 Transaction Set Control Number (from
ST02 of the transaction set being
acknowledged)

060 AK5*A N/L**Transaction Set Response Trailer**

717 AK501 A Transaction Set Acknowledgment Code
A - Accepted

030 AK2*863*0003 N/L**Transaction Set Response Header**

143 AK201 863 Transaction Set Identifier Code
863 - Report of Test Results

329 AK202 0003 Transaction Set Control Number (from
ST02 of the transaction set being
acknowledged)

040 AK3*PER*8 N/L**Data Segment Note**

721 AK301 PER Segment ID Code
PER

719 AK302 8 Segment Position in the Transaction Set
8th segment in the transaction

050 AK4*2*366*7 N/L

Data Element Note

C030	AK401	2	Position in Segment Second element in the segment.
725	AK402	366	Data Element Reference Number Data Element 366
723	AK403	7	Data Element Syntax Error Code 7 - Invalid code value
060	AK5*R	N/L	
	Transaction Set Response Trailer		
717	AK501	R	Transaction Set Acknowledgment Code R - Rejected

070 AK9*A*3*3*2 N/L**Functional Group Response Trailer**

715	AK901	A	Transaction Set Identifier Code A - Accepted
97	AK902	3	Number of Transaction Sets Included in the Functional Group being acknowledged (from GE01 of the group being acknowledged).
123	AK903	3	Number of Received Transaction Sets (Receiver's count)
2	AK903	2	Number of Accepted Transaction Sets

080 SE*12*0001 N/L**Transaction Set Trailer**

96	SE01	XX	Number of Included Segments (in the transaction).
329	SE02	0001	Transaction Set Control Number. Must be the same as in ST02.

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B.3 997 Functional Acknowledgment Sample Transmission

This example is based on receipt of a transmission containing 3 reports (transaction set 863 - Report of Test Results); two were correct; the third had an error in the eighth segment, a PER which contained an invalid code in the second data element (DE 366).

ST*997*0001 N/L
AK1*RT*2 N/L
AK2*863*0001 N/L
AK5*A N/L
AK2*863*0002 N/L
AK5*A N/L
AK2*863*0003 N/L
AK3*PER*8 N/L
AK4*2*366*7 N/L
AK5*R N/L
AK9*A*3*3*2 N/L
SE*12*0001 N/L

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APPENDIX C

C.1 Self Monitoring Report (863 - Report of Test Results)

PURPOSE: This implementation of the 863 Report of Test Results is used for the submission of the Self Monitoring Report to the POTW's. One 863 transaction will be used to submit an entire SMR, i.e., all discharge monitoring data from a permittee for one monitoring period.

TIMING: A translated SMR must be received by the POTW's in accordance with the SMR submittal date of the state of the site reporting data. It is the responsibility of the permittee submitting the SMR to assure that a translatable transaction is received by the POTW's in a timely manner.

TRANSACTION SET: ASC X12 Report of Test Results (863), Version/Release 004010.

NOTE: The following symbols are found in the convention:

> > indicates an element is required

X indicates an element is not used

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C.2 Detailed Mapping

The following is a detailed mapping of an 863. It gives examples and explanations for the usage of this transaction set.

HEADER AREA

POS SEGMENT/ELEMENT INFORMATION
DE#

010 ST*863*00001 N/L
Transaction Set Header

143 ST01 863 Transaction Set ID Code.
863 - Report of Test Results

329 ST02 0001 Transaction Set Control Number.

020 BTR*05*19981202*1030*ZZ*628307*62502 N/L
Beginning Segment for Test Results

353 BTR01 05 Transaction Set Purpose.
00 - Original
05 - Replace

373 BTR02 19981202 Date the transaction was created - December 2, 1998.

337 BTR03 1030 Time the transaction was created - 10:30 PM.

755 BTR04 ZZ Report Type Code.
ZZ - Self Monitoring Report
A5 - Annual Roll-up Type Report

127 BTR05 628307 Report Number.

127 BTR06 Previous Report Number when the report is a
Resubmission. i.e. when BTR01 equals 05.

786 BTR07 Security Level Code

Floating NTE*NCD*Additional test information N/L

Note\Special Instruction

363	NTE01	NCD	Note Reference Code	NCD -
			Nonconformance Specification. This segment is used	
			to elaborate any additional parameter information.	
		CER	Certification Narrative	
		TMP	Toxic Organic Management	
		ZED	Zero Discharge	
3	NTE02	Text	Free Form Message	
			Free-form text.	

050 DTM*458*19980113 N/L

SMR EDI IMPLEMENTATION GUIDELINE

374	Date/Time Reference DTM01	458	Date/Time Qualifier. 458 - Certification
373	DTM02	19980115	Date the Responsible Corporate Officer certified this Self Monitoring Report - January 15, 1998.
050	DTM*090*19981201 N/L Date/Time Reference		
374	DTM01	090	Date/Time Qualifier. 090 - Report Start
373	DTM02	19981201	Date December 1, 1998
050	DTM*091*19981231 N/L Date/Time Reference		
374	DTM01	091	Date/Time Qualifier. 091 - Report End
373	DTM02	19981231	Date December 31, 1998
080	N1*8D*ABC Company N/L Name		
98	N101	8D VI VU	Entity Identifier Code. 8D - Permit Holder Contact Person (Code Not Yet X12) Second Contact Organization (Code Not Yet in X12)
93	N102	ABC Company	Name Submitting Company Name.
66	N103		Identification Code Qualifier.
67	N104		ID Code Not used when N101 = 8D
080	N1*ZD**94*WEA N/L Name		
98	N101	ZD	Entity Identifier Code. ZD - Party to Receive Reports
93	N102		Name
66	N103	94	Identification Code Qualifier. 94 - Code assigned by the organization that is the ultimate destination of the transaction set.
67	N104	WEA	ID# assigned by the EPA.

			Used when N101 = ZD. To specify a code used by the recipient of the transaction
706	N105		Entity Relationship Code

090	N2		Additional Name Information
------------	-----------	--	------------------------------------

93	N201		Name
----	------	--	------

93	N202		Name
----	------	--	------

100	N3		Address Information
-----	----	--	---------------------

166	N301		Address Information (additional)
-----	------	--	----------------------------------

166	N302		Address Information (additional)
-----	------	--	----------------------------------

110	N4		Geographic Location
-----	----	--	---------------------

19	N401		City Name
----	------	--	-----------

156	N402		State or Province Code
-----	------	--	------------------------

310	N406		Location Identifier
-----	------	--	---------------------

120	REF*PN*XXD003301 N/L		
	Reference Numbers		

128	REF01	PN	Reference Number Qualifier. PN - Permit Number
-----	-------	----	---

127	REF02	XXD003301	Reference Number permit number of the site reporting.
-----	-------	-----------	--

130	PER*CE*John Smith*TE*(800)555-1212 N/L		
	Administrative Communications Contact		

366	PER01	CE	Contact Function Code. CE – Certifier
-----	-------	----	--

93	PER02	John Smith	Name.
----	-------	------------	-------

365	PER03	TE	Communications Number Qualifier TE - Telephone
-----	-------	----	---

364	PER04	(800) 555-1212	Communication Number Telephone number of Certifier.
-----	-------	----------------	--

365	PER05	FX	Communication Number Qualifier FX = Facsimile
-----	-------	----	--

364	PER06	(800)555-1211	
-----	-------	---------------	--

SMR EDI IMPLEMENTATION GUIDELINE

365	PER07	EM	Communications Number Qualifier EM = Electronic mail
364	PER07	smithJ@wea.com	
140	REF*4A*53411	N/L	
	Reference Numbers		
128	REF01	4A	Reference Number Qualifier. 4A - Personal Identification Number
127	REF02	53411	Reference Number The number assigned by POTW to the individual responsible for the signing the paper SMR.

DETAIL AREA

010	LIN*1*P5*OUTFALL*1	N/L	
	Item Identification		
350	LIN01	1	Assigned Identification Sequential number to uniquely identify the repetition of the loop. Begin with 1 and increment by 1 for each subsequent occurrence of the loop.
235	LIN02	P5	Product/Service ID. Qualifier. P5 - Material Discharge Number.
234	LIN03	1	Product/Service ID Number Discharge Number.
040	PID*S*08*EP*TAB1B***PCS160		
	Product/Item Description		
349	PID01	S	Item Description Type S - Structured from the PCS Codes and Descriptions Volume
750	PID02	08	Product/Process Characteristic Code 08 - Parameter Code 68 - Chemistry (Preservative used) 88 - Flow Discharge Indicator Code ST - Sample Type
559	PID03	EP	Agency Qualifier Code EP - U.S. EPA
751	PID04	TAB1B	Product Description Code PCS Code from code table referenced in PID07

025	352	PID05		Description, When PID02 = 08 Parameter code: Cadmium, Copper, Cyanide, Lead, Nickel, and Zinc When PID02 = 68 then Preservative used
	822	PID07		Source Subqualifier
	TMD Test Method			
	750	TMD01	RM	Product/Process Characteristic Code. RM – Results Method Code
	559	TMD02	EP	Agency Qualifier Code EP - U.S. EPA
	751	TMD03		Product Description Code Analytical Method Value
030	MEA*TR*FR**GL::1000000*DA*06 N/L Measurements			
	737	MEA01	CT	Measurement Reference ID Code CT - Count
			TR	TR – Test Results Indicates that the data to flow are the results test measurements
	738	MEA02	C	Measurement Qualifier C – Actual New Repeated for Combination
			COT	Content
			FR	Flow Rate
	739	MEA03		Measurement Value
	C001	MEA04		Composite Unit of Measure
	355	C0101	1N	Unit or Basis for Measurement Code 1N – Count
			CE	CE – Centigrade, Celsius
			FA	FA – Fahrenheit
			H5	pH scale for acidity
			MH	MH -Micron (Micrometers)
			N7	N7 - Parts
	935	MEA07	03	Measurements Significance Code 03 – Approximately 06 – Greater than 07 – Less 44 – Average 46 – Estimated 97- Maximum ZZ – Regulated Limits

SMR EDI IMPLEMENTATION GUIDELINE

040 DTM*615*19980101 N/L

Date/Time Reference

374 DTM01 615

Date/Time Qualifier

615 – Date Acquired

373 DTM02

Date

337 DTM03

Time

045 REF*X0*123456 N/L

Reference Identification

128 REF01 X0

Reference ID Code.

X0 – Sample Number

127 REF02

Lab Sample Number

123456

**050 NTE*NCD* Explanation of Violation N/LComposite Unit of Measure.
Note/Special Instruction**

363 NTE01 NCD

Note Reference Code.

NCD – Nonconformance Specification

352 NTE02

Description.

Free-form

SUMMARY AREA

010 SE*58*0001 N/L

Transaction Set Trailer

96 SE01 58

Number of Included Segments (in the transaction).

329 SE02 00001

Transaction Set Control Number. Must be the same as in ST02.

C.3 Sample Transmission

The following is a sample transmission of the SMR:

ISA*00* *01*SITE NAME *01*XXD003456780
*01*057944910*19981014*1743*U*00401*000000034*0*T*: N/L
GS*RT*SMR PILOT*PCS*19981014*1734*34*X*004010 N/L
ST*863*00001 N/L
BTR*00*19981014*1730*ZZ*0001 N/L
DTM*090*19980501 N/L
DTM*091*19980531 N/L
DTM*058*19981014 N/L
N1*8D*ABC COMPANY N/L
REF*PN*XX03301 N/L
PER*CE*JOHN SMITH*TE*800/555-1212 N/L
REF*4A*53411 N/L
N1*ZD**94*WEA N/L
LIN*1*P5*001 N/L (Discharge Number)
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
TMD*RM*EP*3.2 N/L
MEA*CT*TR*1N N/L (# of excursions)
MEA*TR*COT**EA**92 N/L
MEA*TR*COT*85.45*EA N/L
DTM*615*19980101*1703 N/L
REF*X0*123456 N/L
LIN*2*P5*001A N/L
NTE*NCD*THESE WERE SEVEN EXCEEDANCES OF THE 6 - 9 PH
MONITORING IN MA N/L
NTE*NCD*Y (5 PH-HIGHS AND 2 PH-LOWS). N/L
NTE*NCD*THESE WERE NOT NON-COMPLIANCES, BUT EXCURSIONS
9PER PART II N/L
NTE*NCD*I.5, THIS PERMIT. N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L
MEA*TR*COT**EA**10 N/L

MEA*TR*COT*5.7*EA N/L
LIN*3*P5*001A N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L
MEA*TR*FR**EA**0 N/L
MEA*TR*FR*0*EA N/L
LIN*4*P5*001A N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L
MEA*TR*FR**EA**0 N/L
MEA*TR*FR*0*EA N/L
LIN*5*P5*001A N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L
MEA*TR*FR**EA**584 N/L
MEA*TR*FR*543.94*EA N/L
LIN*6*P5*001A N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L
MEA*TR*FR**EA**0 N/L
MEA*TR*FR*0*EA N/L
LIN*7*P5*001A N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L
MEA*TR*QUR**EA**0 N/L
MEA*TR*FR*0*EA N/L
SE*77*00001 N/L

ST*863*00002 N/L
BTR*00*19981014*1730*ZZ*0002 N/L
DTM*090*19980501 N/L
DTM*091*19980531 N/L
DTM*058*19980614 N/L
N1*8D*ABC COMPANY N/L
REF*PN*XXD003311 N/L
PER*CE*JOHN SMITH*TE*800/555-1212 N/L
REF*4A*22122 N/L
N1*ZD**94*WEA N/L
LIN*1*P5*002A N/L (Discharge Number)
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L (# of excursions)
MEA*TR*CON**EA**7.6 N/L (Concentration)
MEA*TR*CON*7.6*EA N/L
LIN*2*P5*002A N/L (Discharge Number)
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L (# of excursions)
MEA*TR*CON**EA**0 N/L (Concentration)
LIN*3*P5*002A N/L (Discharge Number)
MEA*CT**0*1N N/L (# of excursions)
MEA*TR*CON**EA**28 N/L (Concentration)
LIN*4*P5*002A N/L (Discharge Number)
NTE*NCD*WHEN FLOWING N/L
PID*S*08*EP*00011***PCS160 N/L (Parameter)
PID*S*68*EP*RT***PCS150 N/L (Preservative Used)
PID*S*88*EP*01/01***PCS050 N/L (Discharge Indicator)
PID*S*ST*EP*01/01***PCS050 N/L (Sample Type)
MEA*CT**0*1N N/L (# of excursions)
MEA*TR*QUR**EA**0.09 N/L (Concentration)
MEA*TR*QUR*.09*EA N/L
SE*38*00002 N/L
GE*2*34 N/L
IEA*1*000000034 N/L